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11 UNITED STATES DISTRICT COURT
12 NORTHERN DISTRICT OF CALIFORNIA
13 SAN JOSE DIVISION

14
15 UNITED STATES OF AMERICA) Case No. 5:15-cr-00106-EJD
16 Plaintiff,)
17 vs.)
18 HAO ZHANG,)
19 Defendant.)
20)
21)
22)
23)
24)
25)

DEFENDANT HAO ZHANG'S NOTICE
OF MOTION AND MOTION FOR BILL
OF PARTICULARS
Date: September 26, 2016
Time: 1:30 p.m.
Place: Courtroom 4, 5th floor
Dept: Hon. Edward J. Davila

NOTICE OF MOTION

22 PLEASE TAKE NOTICE that on September 26, 2016 at 1:30 p.m., or as soon as the matter
23 may be heard before the Honorable Edward J. Davila, defendant Hao Zhang will and hereby does
24 move the Court for an order requiring the government to issue a bill of particulars providing the
25 information set forth below, or as the Court may direct in its discretion. This motion is based upon

1 the instant notice, the attached memorandum of points and authorities, the records in this case, and
2 upon such arguments made at the hearing.

3 **MEMORANDUM AND POINTS OF AUTHORITIES**

4 **I. INTRODUCTION**

5 Professor Hao Zhang (“Professor Zhang” or “Zhang”) is charged in the Superseding
6 Indictment (“Indictment”) with 14 counts of theft of a trade secret, 14 counts of economic
7 espionage, one count of conspiracy to commit theft of trade secrets, and one count of conspiracy
8 to commit economic espionage, in violation of 18 U.S.C. §§ 1831 and 1832. The Indictment lists
9 23 purported trade secrets belonging to Avago Technologies, Inc. (“Avago”) and Skyworks
10 Solutions, Inc. (“Skyworks”). Throughout the Indictment, the United States repeatedly alleges that
11 Zhang e-mailed Avago and Skyworks trade secrets to other co-conspirators and filed patent
12 applications containing Avago and Skyworks trade secrets. The Indictment, however, does not
13 adequately identify the trade secrets that Professor Zhang is alleged to have stolen with sufficient
14 detail for Zhang to identify the conduct or alleged trade secret underlying the charged offense.
15 And, the documents produced in the case provide no clarity as to the alleged trade secrets. In fact,
16 the voluminous discovery only adds to the confusion regarding what alleged trade secrets Professor
17 Zhang is accused of stealing.

18 Professor Zhang and his counsel have reviewed the Indictment in detail, attempting to
19 connect various overt acts to the substantive counts, as well as the discovery provided by the
20 government in an attempt to understand the specific structures, processes, specifications or items
21 that the government claims were trade secrets. As set forth in more detail below, the information
22 provided by the government in the Indictment and the discovery it has provided to the defense is
23 simply insufficient for Professor Zhang to identify the precise technologies, designs, or
24 information that it claims were trade secrets. The Court, therefore, should exercise its discretion
25 to grant a bill of particulars in this case.

1 **II. LEGAL STANDARD**

2 In *Bartell v. United States*, 227 U.S. 427 (1913), the Supreme Court stated:
 3 “It is elementary that an indictment, in order to be good under the Federal Constitution and laws,
 4 shall advise the accused of the nature and cause of the accusation against him, in order that he may
 5 meet the accusation and prepare for his trial” *Id.* at 431; *see also Wong Tai v. United States*,
 6 273 U.S. 77, 80-81 (1927) (an indictment must “advise the defendant of the nature and cause of
 7 the accusation in order that he may meet it and prepare for trial”). A corollary of that principle,
 8 Federal Rule of Criminal Procedure 7(f), permits a defendant to seek a bill of particulars to obtain
 9 sufficient information about the charges against him so that the defendant can prepare his defense.
 10 A bill of particulars “is designed to apprise the defendant of the specific charges being presented
 11 to minimize danger of surprise at trial, to aid in preparation and to protect against double jeopardy.”
 12 *United States v. Long*, 706 F.2d 1044, 1054 (9th Cir. 1983). The Ninth Circuit has recognized that
 13 a bill of particulars is appropriate when the indictment does not contain sufficient detail for a
 14 defendant to prepare his defense. *See Id.* at 1054 (“A motion for a bill of particulars is appropriate
 15 where a defendant requires clarification in order to prepare a defense”); *see also United States v.*
 16 *Mitchell*, 744 F.2d 701, 705 (9th Cir. 1984) (finding that the “purposes of a bill of particulars are
 17 to minimize the danger of surprise at trial and to provide sufficient information on the nature of
 18 the charge to allow preparation of a defense.”). “The decision to require a bill of particulars is
 19 within a trial court’s discretion, which is broad under these circumstances.” *United States v.*
 20 *Cristobal*, No. 5:11-CR-00355-EJD, 2015 WL 4128824, at *3 (N.D. Cal. July 8, 2015) (citing
 21 *Long*, 706 F.2d at 1054).

24 **III. ARGUMENT**

25 In this case, the complexity of the technology at issue and the paucity of detail in the
 Indictment justify the granting of a bill of particulars. The technology at issue in the case — Film

1 Bulk Acoustic Resonators — is highly technical and well developed. The basic structure of an
2 FBAR filter has been known in the industry for more than 30 years. *See Declaration of Michael*
3 *L. Brown (“Brown Dec.”) at ¶3.* Many companies develop and manufacture this technology and
4 it is studied at universities all over the world. There are over 3,600 patents and patent applications
5 about Film Bulk Acoustic Resonators dating back to the early 1990s. *See Declaration of Timothy*
6 *R. Watson (“Watson Dec.”) at ¶2.* Avago has no monopoly on the development, innovation, or
7 manufacturing of FBARs.

8 Professor Zhang is an expert in FBAR design and manufacturing. He obtained his
9 doctorate from the University of Southern California in 2006 and then worked for several years at
10 Skyworks before returning to China to teach at Tianjin University, one of the nation’s premier
11 technical universities. Brown Dec. at ¶4. To defend himself against allegations that he stole Avago
12 or Skyworks trade secrets in the area of FBAR design and development, Professor Zhang will have
13 to show that the patents he filed or emails he sent did not contain Avago or Skyworks trade secrets.
14 For some allegations, he may present evidence about his patents and compare them to specific
15 elements of Avago’s and Skyworks’s alleged trade secrets—showing that his work was
16 fundamentally different. For other allegations, he may present evidence showing that Avago’s and
17 Skyworks’s alleged trade secrets were not, in fact, trade secrets but rather were well-developed
18 technology and publicly known within the industry. To develop and present either defense,
19 Professor Zhang must be notified of the specific trade secrets that he is alleged to have stolen. And
20 yet, the Indictment is chock-full of summary allegations that offer little or no information about
21 the specific trade secrets that the government claims Professor Zhang and his co-conspirators stole.
22 The government, for example, alleges repeatedly that detailed and complex patent applications or
23 documents Professor Zhang emailed contained “Skyworks trade secrets” or “Avago trade secrets”
24 without identifying the precise technology or design that the government claims was a trade secret
25 other than in the most cursory manner. In other allegations, the government alleges that Avago

1 had manufacturing processes that were “a particular manner proprietary to Avago” or “fabrication
2 process steps” developed by Avago. In still other allegations, the government describes an alleged
3 trade secret in such generic terms that could not possibly constitute a trade secret in this highly
4 developed field. These broad allegations are fundamentally unfair and insufficient to inform
5 Professor Zhang of the allegations against him. If this were a civil case, the alleged trade secrets
6 would have to be defined with “reasonable particularity,” which is with “sufficient particularity to
7 limit the permissible scope of discovery by distinguishing the trade secrets from matters of general
8 knowledge in the trade or of special knowledge of those persons ... skilled in the trade.”

9 *See Cal. Civ. Proc. Code § 2019.210 (West); Advanced Modular Sputtering, Inc. v. Superior Court,*
10 132 Cal. App. 4th 826, 835, 33 Cal. Rptr. 3d 901, 907 (2005). The same detail about the alleged
11 trade secrets that is required in civil disputes where only money is at issue should be required from
12 the government in this case where Professor Zhang’s liberty is at stake.

13 As discussed in further detail below, the patent applications that the government cites in
14 most of the substantive counts are 20 or 30 pages long, with detailed drawings and lengthy
15 descriptions of every aspect of an invention. The United States cannot possibly suggest that the
16 entire patent is an Avago trade secret. This is especially true given the facts that (1) much of the
17 information in both Professor Zhang’s patents and Avago’s similar patents was already in the
18 public domain, and (2) the United States patent office granted several of Professor Zhang’s patents
19 and Avago’s similar patents, thus indicating unique innovation between the patents. There must
20 be some subcomponent of Professor Zhang’s patent applications that the government alleges is a
21 trade secret—some manufacturing process, design detail, or technological innovation. And, yet
22 the Indictment fails to identify the precise trade secret.

23 Professor Zhang is not attempting to obtain any information beyond which he is entitled
24 to under the law. The Indictment contains definitions for 23 alleged Avago and Skyworks trade
25 secrets, 75 overt acts, and 32 substantive counts. The sheer number of allegations, however, does

1 not mean that the Indictment provides sufficient details for Professor Zhang to understand the
2 precise trade secrets that he is alleged to have stolen so that he can mount his defense. Nor does
3 the voluminous discovery—over 975,000 pages—that the government has provided defense
4 counsel. *See* Brown Dec. at ¶5. Courts in this district have found that “requiring [the] defendant
5 to search through a mountain of discovery does not satisfy the obligation to adequately advise [the]
6 defendant of the charges against him.” *United States v. Chen*, No. C 05-375, 2006 WL 3898177,
7 at *3 (N.D. Cal. Nov. 9, 2006); *See also United States v. Feil*, No. CR 09-00863 JSW, 2010 WL
8 1525263, at *3 (N.D. Cal. Apr. 15, 2010) (granting in part a request for a bill of particulars where
9 the government produced over 70,000 pages of discovery). And, having reviewed the discovery
10 in detail, defense counsel remains unable to identify the trade secrets that Professor Zhang was
11 alleged to have stolen.

13 Professor Zhang, therefore, seeks a bill of particulars requiring the government to identify
14 the specific trade secret at issue in certain substantive counts as well as certain overt acts.¹

15 **Requests for Bill of Particulars Regarding Substantive Counts.**

16 Counts 3, 13, 18, and 28

17 The government contends that Professor Zhang and his co-conspirators stole an Avago
18 trade secret that the government identifies as “Avago’s Temperature Compensation (‘Tempco’)
19 project technology.” The government claims that Professor Zhang committed this theft and
20 economic espionage when he filed patent applications in the United States and China involving

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23 ¹ Professor Zhang does not seek a bill of particulars on the seven counts alleging theft of trade
24 secrets and economic espionage involving Avago’s P-cells and Design Kits, specifically Counts
25 7, 8, 10, 15, 22, 23, and 30. The allegations in the Indictment regarding these counts specify the
exact file that the government believes contains Avago’s trade secrets. And, each document
contains only the technology identified in the substantive count.

1 temperature compensation technology. *See* Indictment at Counts 3 and 18 (theft and espionage
2 counts arising from Zhang's filing of patent application in United States); Indictment at Counts 13
3 and 28 (theft and espionage counts arising from Zhang's filing of Chinese patent application). In
4 one overt act, the government alleges that Zhang's patent application in the United States was
5 "based on stolen Avago Temperature Compensation ("Tempco") project technology." Indictment
6 at ¶30(xx). Neither the substantive counts nor the overt act provide any further detail about the
7 alleged trade secret at issue. As the only other allegation involving this purported trade secret, the
8 Indictment defines Avago's Temperature Compensation Layer (which Professor Zhang assumes
9 is the same thing as Avago's Temperature Compensation project technology) as: "Avago placed a
10 temperature compensation layer between two electrodes as part of its FBAR design, and found
11 that a smoother and more gradual slope avoided cracking and enhanced performance." Indictment
12 at ¶18(f). This detail cannot possibly identify the alleged trade secret. Placing a temperature
13 compensation layer within a filter to control variation of the filter frequency with temperature is
14 widely known in the FBAR industry. *See* Brown Dec. at ¶6. Similarly, having a gradual slope to
15 the compensation layer to avoid cracking of any subsequently deposited layers on top of the
16 compensation layer is also fundamental manufacturing knowledge. *Id.*

17 Indeed, Professor Zhang's initial patent application was rejected by the United States
18 Patent and Trademark Office ("USPTO" or "PTO") for obviousness, indicating that his proposed
19 design of placing a temperature compensation layer in the top electrode had already been done by
20 others. Watson Dec. at ¶3. Professor Zhang revised his patent application to add vias or trenches
21 in the compensation layer and the Patent Office granted his patent. *Id.* It took Professor Zhang
22 two years to get the patent approved. The discovery provided to the defense indicates that Avago
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1 also filed a patent on its “Tempco” technology.² In preparing for trial, counsel has learned that
2 Avago actually filed two patent applications on “Tempco,” one in 2010 and another in 2012.
3 Watson Dec. at ¶4. The United States Patent Office rejected both Avago’s first and second patent
4 applications because of older patents held by Avago and Panasonic. Thus, the PTO’s records
5 indicate that: (i) Avago’s “Tempco” project falls largely within a publicly known space, (the older
6 Avago and Panasonic patents); and (ii) the PTO did not find Professor Zhang’s patents and
7 applications sufficiently similar to Avago’s to rely on them in rejecting Avago’s patent
8 applications. *Id.*

9
10 So, what part of Professor Zhang’s patent application allegedly contained an Avago trade
11 secret? Was it the vias and trenches that Professor Zhang added to get his patent application
12 granted? The Indictment does not mention vias and trenches but, perhaps, that is what the
13 government claims. If so, Professor Zhang may defend himself by showing that Avago never
14 considered this design feature in its patent applications. *Id.* at ¶5. Or was it the fundamental idea
15 of putting a temperature compensation layer within a filter? This innovation, however, was already
16 in the public domain, as evidenced by previous patents and various articles discussing temperature
17 compensation in FBAR filters. Brown Dec. at ¶6. Or, was it the idea of using a gradual slope in
18 the manufacturing process to avoid cracking? This technique is a common practice in microchip
19 manufacturing. Or was it some other detail in Professor Zhang’s highly technical patent
20 application; an application that the Patent Office reviewed for more than two years? The point is
21 that Professor Zhang must be permitted the opportunity to focus his defense on the precise trade
22 secret that the government contends he stole. The government, therefore, must be required to
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² The reference to the Avago patent involving Tempco technology was included in one of the search warrant affidavits produced by the government.

1 identify the precise trade secret at issue. Without this information, Professor Zhang cannot defend
2 himself in a focused and effective manner against the four substantive counts (and the conspiracy
3 allegation) that he stole Avago's trade secret related to temperature compensation.

4 As part of this motion, Professor Zhang has obviously provided additional details about his
5 defense strategy and trial preparation in regards to the alleged theft of temperature compensation
6 trade secrets. He has done so in order to explain better his argument that a bill of particulars should
7 be granted in this case. Professor Zhang used this alleged trade secret as an example simply
8 because temperature compensation is the subject of the first substantive count. The same argument
9 holds true for each and every one of the other alleged trade secrets. Professor Zhang needs to
10 protect his defense strategy and, therefore, has not provided as many details as to each other alleged
11 trade secret at issue.

13 Counts 4 and 19

14 The government also alleges that Professor Zhang stole Avago trade secrets related to
15 "Coupled Resonator Filters ('CRF') technology." The government contends that he committed
16 theft and economic espionage of this trade secret when he filed a patent application in the United
17 States. *See* Indictment at Counts 4 and 19 (theft and espionage counts arising from Zhang's filing
18 of patent application in the United States). The government includes the same allegation in two
19 overt acts but provides no additional information about the alleged trade secret. Indictment at
20 ¶30(yy), (jjj). The only other reference to CRF technology is the government's definition of the
21 technology: "Avago's CRF Project was a method for manufacturing an acoustically-coupled
22 device for FBARs. The *particular manner* in which Avago manufactured the device enhanced the
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1 performance of its FBARs.”³ Indictment at ¶18(g) (emphasis added). Apparently, the government
 2 contends that Avago had a “particular manner” of manufacturing this device. But, neither the
 3 Indictment nor any of the discovery discloses or describes the “particular manner.” What is it?
 4 How can Professor Zhang defend himself against a claim that he stole it, when the government has
 5 not disclosed what it is?

6 Professor Zhang’s patent application was 31 pages long with a detailed discussion of the
 7 technology he sought to patent. *See* Brown Dec. at ¶7. Is Avago’s “particular method” contained
 8 somewhere in it? If so, where? It is fundamentally unfair to require Professor Zhang to defend
 9 himself against a claim that he stole something as of yet unidentified. The government must be
 10 required to disclose the “particular method” that it contends constituted an Avago trade secret so
 11 that Professor Zhang can understand the charge against him and prepare his defense.

13 Counts 5 and 20

14 As with the other alleged trade secrets, the government contends that Professor Zhang stole
 15 Avago trade secrets and committed economic espionage involving Avago’s Silicon Carbide
 16 technology when he filed a patent application in the United States. *See* Indictment at Counts 5
 17 and 20 (theft and espionage counts arising from Zhang’s filing of patent application in the United
 18 States regarding silicon carbide). No overt acts provide any additional information about this
 19 alleged trade secret. Instead, they merely claim that Professor Zhang filed his patent “based upon
 20 stolen Avago Silicon Carbide technology.” Indictment at ¶30(zz). And, as with the CRF
 21 allegations discussed above, the government’s attempt to define the trade secret offers no help.

23

24 ³ The Indictment explains that CRF stands for Coupled Resonator Frequencies in the section
 25 about Avago’s Trade Secrets. CRF is later used to define Coupled Resonator Filters. We
 assume these definitions are referring to the same alleged trade secret. Our understanding is that
 the technology is called Coupled Resonator Filters.

1 The government merely alleges that “Avago’s Silicon Carbide Project combined two passivation
2 layers, or coatings, of silicon carbide in a *particular manner* proprietary to Avago.” Indictment at
3 ¶18(f) (emphasis added). Again, how can Professor Zhang defend himself against an allegation
4 that he stole a “particular manner” when that “manner” is not disclosed? Is it how the passivation
5 layers are designed? How they relate to each other? Where they are in the filter? Or is the trade
6 secret the fact that the passivation layers are made of silicon carbide? Or, rather than being about
7 the design, is it a “particular manner” of how the layers are manufactured? The government does
8 not say, and the defense cannot possibly know.

9
10 Certainly at trial the government will have to disclose to the jury the “particular manner”
11 that it claims Professor Zhang stole (if that is what they allege). Professor Zhang should not be
12 required to prepare a defense to each and every possible allegation his attorneys can imagine. He
13 has a constitutional right to be notified of the allegations so that he can prepare his defense. The
14 general accusation that Professor Zhang stole *something* related to silicon carbide is not enough to
15 provide sufficient notice of the offense charged in this highly technical and precise industry.

16 Counts 6 and 21

17 In Counts 6 and 21 of the Indictment, the government alleges that Professor Zhang stole
18 Skyworks trade secrets and committed economic espionage involving Composite Bulk Acoustic
19 Wave Resonator technology when he filed a patent application in the United States regarding this
20 technology. *See* Indictment at Counts 6 and 21 (theft and espionage counts arising from Zhang’s
21 filing of patent application in United States regarding composite bulk acoustic wave resonator
22 technology). The related overt act offers no further detail about this technology. Indictment at
23 ¶30(ggg). And, the Indictment offers no definition of this alleged trade secret. Indeed, the
24 Indictment says nothing else about it whatsoever.

1 Skyworks does not appear to have filed a patent application on this alleged technology so
2 Professor Zhang cannot look there for any insight. *See* Watson Dec. at ¶6. Likewise, a search of
3 the discovery in this case produces no results for documents from Skyworks regarding its
4 Composite BAW Resonator technology. Brown Dec. at ¶8. Included in the discovery is a
5 statement by a former Skyworks employee that, when shown a copy of Professor Zhang's patent,
6 he remarked that the patent "related" to BAW filters that Skyworks worked on but that he would
7 "need to carefully read it in order to see the details" and to be sure of his assertion. *Id.* at ¶9. How
8 can Professor Zhang defend himself against this allegation when there is no explanation as to the
9 alleged trade secret in the Indictment or the discovery? Is he required to defend every statement
10 in the patent application identified in the Indictment? Certainly not. If the Skyworks employee
11 said that he would have to review the details of the patent application to compare it to his
12 company's work on BAW filters, how can Professor Zhang be expected to do this when he does
13 not even have access to Skyworks prior work? The government must be required to identify the
14 Skyworks technology or innovation that it claims Professor Zhang stole.

16 Counts 9 and 24

17 The government also alleges that Professor Zhang stole Avago trade secrets and committed
18 economic espionage when he filed patent applications in China related to Wings technology. *See*
19 Indictment at Counts 9 and 24 (theft and espionage counts arising from Zhang's filing of patent
20 applications in China regarding Wings technology). These same allegations are repeated in two
21 overt acts that concern the United States and Chinese patent applications but offer no other details.
22 Indictment at ¶30(ww), (ccc). Another overt act also alleges that Professor Zhang emailed a 36-
23 page Avago PowerPoint presentation about Avago's Air Bridge and Wings technology. *Id.* at
24 ¶30(kk). The overt act does not allege that the PowerPoint presentation contained any trade

1 secrets, [REDACTED] The Indictment
2 further defines Avago's Wings and Undercut Design Features as: "Avago's 'Wings' feature
3 derived its name from the wing shape of one layer. Avago developed Wings simultaneously with
4 its Air Bridge. Wings had a specific feature called an 'undercut.' Avago perfected a wet-etching
5 process to create the undercut and specifically designed its FBARs to have a slight undercut."
6 Indictment at ¶18(d).

7 From this information, it is impossible for Professor Zhang to identify the trade secret he
8 is alleged to have stolen. The Indictment claims that Avago perfected a wet-etching process and
9 that was part of its trade secret for the Wings technology. Professor Zhang does not mention wet-
10 etching in his patent application. *See* Brown Dec. at ¶10. So what is the alleged trade secret that
11 the government is accusing Professor Zhang of stealing? If it is not wet-etching, is it the undercut
12 feature? Is that unique to Avago? There were over 500 pieces of prior art cited by Avago or the
13 Patent Office during prosecution of Avago's patent, an indication that Avago knew the technology
14 at issue was well developed with many aspects already known to the public. *See* Watson Dec. at
15 ¶7. How can Professor Zhang defend himself against these allegations without further detail? He
16 needs to understand the specific alleged trade secret in the Wings technology that he is alleged to
17 have stolen, less the government plan to argue that the every aspect of the technology and
18 manufacturing process were protected by Avago as trade secrets. And if they were, Professor
19 Zhang must understand that the government intends to prove that expansive definition of these
20 alleged trade secrets at trial.

21 In assessing this motion, it is important to note that both Professor Zhang's and Avago's
22 Wings patents were granted by the US Patent Office, a clear indication that each patent had unique
23 claims about the technology. *Id.* at ¶8. How can Professor Zhang determine the hidden trade
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1 secret in Avago's patent application or the use of Avago's alleged trade secret in his patent
2 application when the USPTO, the government agency whose sole job is to analyze patents, found
3 that the technology claimed in Professor Zhang's patent was unique to that in Avago's? He cannot.
4 Without clarification from the government, Professor Zhang will be forced to prepare a defense
5 against every detail in Avago's and his own patent applications. He will be forced to hire an expert
6 to analyze each specific claim in the patent applications and do significant research to determine
7 what part of those claims was known to the public. Certainly, the Constitution requires the
8 government to provide more specificity.
9

10 Counts 12 and 27

11 The government next alleges that Professor Zhang stole Avago trade secrets and committed
12 economic espionage when he filed patent applications in China related to Air Bridge technology.
13 See Indictment at Counts 12 and 27 (theft and espionage counts arising from Zhang's filing of
14 patent application in China regarding Air Bridge technology). These same allegations are repeated
15 in two overt acts that concern the United States and Chinese patent applications but offer no other
16 details. Indictment at ¶30(qq), (fff). The Indictment defines Avago's Air Bridge Design Feature
17 as: "Avago's 'Air Bridge' connected the top electrode on an FBAR to the electrical pad. Avago's
18 Air Bridge contained unique features, such as allowing kinks to remain and machining the air
19 bridge to match the contours of the sloped layers beneath it. Avago's Air Bridge enhanced the
20 performance of its FBARs by improving the amount of energy an FBAR reflected back."
21 Indictment at ¶18(c).

22 Aside from the sparse definition of the alleged trade secret, the only information available
23 to Professor Zhang are his patent application, Avago's patent application, and the 36-page Power
24 Point presentation. From these items, it is impossible to determine the alleged trade secrets
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1 concerning Air Bridge technology. Does the United States contend that it was the decision to
2 connect the top electrode to the electrical pad? Or is it allowing “kinks” to remain? Or is it
3 “machining the air bridge to match the contours of the slope layers beneath it?” The Indictment
4 does not specify. But, depending on what the government intends, Professor Zhang may adopt
5 different defenses, perhaps showing that the design feature of connecting the top electrode to the
6 electrical panel was already well known or showing that his patent does not include “kinks.” The
7 point is that without additional information about the alleged trade secret, Professor Zhang cannot
8 possibly develop a defense at trial.
9

10 And, as in the case of the Air Bridge technology, the US Patent Office approved both
11 Avago’s and Professor Zhang’s patents, indicating that they contain distinct innovations. *See*
12 Watson Dec. at ¶8. Without an order requiring the government to identify the alleged trade secret
13 at issue, Professor Zhang will not be able to defend against these allegations.

14 Counts 11 and 26

15 Counts 11 and 26 of the Indictment allege that Professor Zhang stole Skyworks trade
16 secrets and committed economic espionage when he emailed a “Skyworks PowerPoint
17 presentation entitled ‘Temperature Compensated BAW Resonator with Embedded Silicon Dioxide
18 Layer underneath Piezoelectric Layer,’ marked ‘Skyworks Solutions Confidential and
19 Proprietary.’” Indictment at Count 11. The PowerPoint presentation is 10 pages long. [REDACTED]

20 [REDACTED]
21 [REDACTED]. *See* Brown Dec. at ¶11. The Indictment
22 does not identify the alleged trade secret within the presentation. The related overt act provides
23 no further detail about the alleged trade secret contained within the PowerPoint presentation. *See*
24

1 Indictment at ¶30(eee). Neither the Indictment nor the discovery provide any other information
2 that might identify the trade secret.

3 What is the alleged trade secret in this PowerPoint presentation? Does the title of the
4 presentation indicate that the secret was temperature compensation via the use of silicon dioxide
5 layers? The Indictment does not identify this as one of Skyworks trade secrets. That technology
6 is only mentioned in other allegations about Avago. It would also be odd to claim that placing a
7 temperature compensation layer of silicon dioxide in a filter is a trade secret when the
8 government's own Indictment indicates that both Avago and Skyworks were working on this well-
9 known technology. So, what is the trade secret in the PowerPoint presentation? Only the
10 government can answer those questions. Professor Zhang cannot defend himself against these
11 allegations unless he receives those answers.

13 Counts 14 and 29

14 In Counts 14 and 29 of the Indictment, the government alleges that Professor Zhang stole
15 Avago's trade secrets and committed economic espionage involving Avago's FBAR design
16 layouts when he received an email attaching a PowerPoint presentation created by the MEMS
17 Group at Tianjin University called "Mask FE901 Design and Layout Review." Indictment at
18 Count 14. One overt act repeats this same allegation. Indictment at ¶30(kkk). The Indictment
19 does not identify the alleged trade secret in the presentation. [REDACTED]

20 [REDACTED]
21 [REDACTED] See Brown Dec. at ¶12. Which of those technologies are
22 related to Avago's Design Layouts? Which slide in the PowerPoint presentation contains Avago's
23 trade secrets? And what are those trade secrets?

1 The Indictment also defines Avago's alleged trade secret involving FBAR Design Layouts,
2 claiming "Avago's FBAR design layouts contained critical parameters that affect FBAR
3 performance." Indictment at ¶18(k). This is another example of an allegation alluding to a method,
4 or in this case a "critical parameter" without providing any detail about those parameters. If the
5 use of "critical parameters" is the alleged trade secret, how can Professor Zhang defend against
6 this allegation without specific information about those parameters? If those "critical parameters"
7 are copied within the PowerPoint presentation, then surely the government must be required to
8 identify them. As it stands now, Professor Zhang is required to defend against a claim that the
9 PowerPoint presentation contains "critical parameters" that the government will not disclose to
10 him.

12 Counts 16 and 31

13 Counts 16 and 31 of the Indictment allege that Professor Zhang stole Skyworks trade
14 secrets and committed economic espionage when he emailed a "Skyworks PowerPoint
15 presentation entitled 'Single to Balanced Circuits' and prepared on a PowerPoint template entitled
16 'Skyworks Template'". Indictment at Count 16. This allegation is repeated as an overt act in
17 ¶30(qqq). The term Single to Balanced Circuits is not defined in the Indictment. While the
18 government did provide the document in question, there is no description as to what the alleged
19 Skyworks trade secret is in the 7-slide PowerPoint presentation. [REDACTED]

20 [REDACTED] See Brown Dec. at ¶13. [REDACTED]

21 [REDACTED] *Id.* [REDACTED]

22 *Id.* It does not appear to be a Skyworks document. Instead, it appears someone used a template
23 from Skyworks which maintained the "Skyworks Solutions" information in the properties of the

1 document. Professor Zhang does not have the ability to determine what the alleged Skyworks
2 trade secret is by simply reviewing the document. How can he determine if Skyworks took steps
3 to protect the trade secret when he doesn't know what it is? How can he determine if the alleged
4 trade secret had independent economic value? How can he prove that he did not steal this alleged
5 trade secret when the only information the government provides to him is a PowerPoint
6 presentation that doesn't appear to belong to Skyworks? Further explanation from the government
7 is necessary to prepare a defense to these allegations.

8

9 **Requests Regarding Overt Acts Unrelated to Substantive Counts.**

10 **Overt Act ¶30(v)**

11 In overt act 30(v), the government alleges that “[o]n September 11, 2008, Wei Pang
12 emailed Hao Zhang the file ‘WCDMA_TX_070803.gds’ containing Avago trade secrets.”
13 Indictment at ¶30(v). This is the sole mention of this file in the Indictment. WCDMA stands for
14 Wide-Band Code-Division Multiple Access, a 3G technology that is used in cell phones. *See*
15 Brown Dec. at ¶14. This technology is not specific to Avago. The government has provided the
16 document to Professor Zhang, but he is unable to determine what the alleged Avago trade secret
17 is in this file. The government must have reviewed this file and determined that it contained Avago
18 trade secrets. It should be required to identify the alleged trade secret so that Professor Zhang can
19 mount a defense.

20 **Overt Act ¶30(x)**

21 In overt act 30(x), the government alleges that “[b]etween October 25 and November 22,
22 2008, Hao Zhang emailed his co-conspirators the specifications and pricing for the Aviza AlN
23 sputter deposition tool, the Omega AlN etching tool, and the Sigma deposition tool, all containing
24 Skyworks trade secrets, in order to prepare to build an FBAR fabrication facility at TJU.”
25

1 Indictment at ¶30(x). The Indictment does not identify the portions of the documents that it claims
 2 contain trade secrets. The Indictment contains one other reference to these machines. Specifically,
 3 the government alleges that Skyworks trade secrets include:

4 **(a) Recipes and Process for Deposition of AlN:** The key step in manufacturing
 5 Skyworks' filters was the deposition of AlN by sputtering. Skyworks developed
 6 uniform and *precise deposition recipes and processes* for AlN sputtering that
 7 directly affected the quality of BAW filters;
 8 **(b) fxP Tool Equipment Specifications:** Skyworks also developed *precise
 9 specifications and customizations* for the fxP tool Skyworks used to deposit AlN;
 10 and
 11 **(c) Omega AlN Etching Tool Equipment Specifications:** Skyworks used an
 12 Omega etching tool to etch the AlN after it had been deposited, and spent
 13 considerable time developing its etching process, including *precise specifications
 14 and customizations*.

15 Indictment at ¶20 (a-c) (emphasis added).

16 Presumably, the government contends in Overt Act 30(x) that the documents contained the
 17 "precise deposition recipes and processes" for AlN sputtering, the "precise specifications and
 18 customizations" for the fxP tool, and the "precise specifications and customizations" for the AlN
 19 etching tool. But, the government does not indicate what those recipes, specifications, and
 20 customizations were or where they were found in the documents. The agreement for the purchase
 21 of the advanced metal sputter system, for example, is 36 pages long. *See* Brown Dec. at ¶15. [REDACTED]

22 [REDACTED]
 23 [REDACTED]
 24 [REDACTED] *Id.* Does the government intend to prove at trial that the entire agreement is a trade secret? [REDACTED]

25 [REDACTED] Machine manufacturers provide detailed specifications (recipes and customizes settings) when they deliver and install machines for their customers. *Id.* at ¶16.

1 They do this depending on the customer's manufacturing requirements. *Id.* Fabricators like
2 Skyworks may further customize those settings as they move through the fabrication process. The
3 fabricator's fine-tuned settings, however, may apply only to their machine in their fabrication
4 environment. *Id.* Professor Zhang may defend against the allegations in Overt Act 30(x) by
5 showing that the specifications in the documents he sent were specifications provided by the
6 machine manufacturer (meaning they were not Skyworks's trade secrets). Or, he may show that
7 the fine-tuned settings were inapplicable outside of Skyworks specific manufacturing environment
8 (meaning the specifications have no independent economic value). But, how can he defend
9 himself when the government has not identified the specifications at issue? It is fundamentally
10 unfair for the government to prosecute Professor Zhang on the grounds that he stole customized
11 settings when the government has not identified those settings.

13 Overt Act ¶30(hh) and ¶30(l)

14 The Indictment alleges that "Skyworks engineers often used PowerPoint presentations
15 containing trade secrets during internal department/team meetings to explain and illustrate
16 Skyworks' processes and test results" and that these internal PowerPoint presentations are trade
17 secrets. *See* Indictment at ¶20(h). This overly vague and broad definition does not properly inform
18 Professor Zhang of the alleged trade secret. This statement could describe almost any PowerPoint
19 presentation that Skyworks ever created. Is the government planning to argue that Skyworks took
20 the necessary steps to protect every PowerPoint presentation from within the company as a trade
21 secret? There are two overt acts that refer to Skyworks PowerPoint presentations that are not
22 charged in the substantive counts of the Indictment. The first is about Skyworks AIN and
23 Molybdenum deposition (¶30(hh)) and the second is about Skyworks BAW and 2D recipe
24 (¶30(l)). Which slides in these PowerPoint presentations contain trade secrets? What specifically

1 are those trade secrets? The government doesn't say, but it should be required to provide this
2 information so that Professor Zhang can defend himself against these allegations. The government
3 should also be required to state whether it plans to prove that any other Skyworks PowerPoint
4 presentation are a trade secret, based on the broad definition of the alleged trade secret in the
5 Indictment.

6 Overt Act ¶30(ii)

7 The Overt Act at Indictment ¶30(ii) contains two separate and unrelated allegations that
8 allegedly happened on the same date. The first part of the allegation claims that Professor Zhang
9 emailed a PowerPoint entitled "Planarization Rate at FBAR CMP" that included detailed
10 photographs, screenshots, and specifications of Avago's CMP process. Indictment at ¶30(ii). [REDACTED]
11 [REDACTED]
12 [REDACTED]

13 [REDACTED] See Brown Dec. at ¶17. [REDACTED]

14 [REDACTED] *Id.* Simply stating that CMP was a step used by Avago in their FBAR
15 fabrication process does not inform professor Zhang of the alleged trade secret he supposedly stole.
16 The definition of CMP as an Avago trade secret offers little help: "CMP was one of the FBAR
17 fabrication process steps performed by technicians at Avago." Indictment at ¶18(j). The
18 government should be required to explain what slides contain the alleged trade secret in the CMP
19 process. Alleging that a PowerPoint presentation contains photographs and specifications of a
20 process is not enough. Is there a particular step in the process that Avago claims is a trade secret?
21 Will the government try to prove that the entire process is a trade secret? Professor Zhang must
22 be notified of the specific allegations so that he can prepare his defense. Alleging that CMP was
23 a fabrication process step performed by Avago and claiming that there are trade secrets hidden in
24 an 18 page PowerPoint presentation is not sufficient.
25

1 The second allegation in this overt act claims that Professor Zhang emailed a screenshot
2 containing Skyworks's process flow. Indictment at ¶30(ii). Similar to the reasons explained
3 above, more detail is needed to put Professor Zhang on notice as to what he must defend himself
4 against. There is no definition of Skyworks's process flow as an alleged trade secret and there is
5 no other mention of their process flow in the Indictment. Claiming that Skyworks's process flow
6 is a trade secret without any further information is simply not enough.

7 Overt Act ¶30(rr)

8 The Indictment alleges that one of Avago's trade secrets is its Ion Mill Etching Process and
9 Trimming Code. That alleged trade secret is defined as: "Avago's ion mill etching process was a
10 unique FBAR fabrication process. Avago maintained a machine-specific trimming code, or source
11 code, that enabled a specific type of machine (a Roth and Rawl brand) to perform the ion mill
12 etching process. The trimming code and the specific type of machine were both essential
13 components to Avago's ion mill etching process." Indictment at ¶18(h). The only specific
14 allegation about the ion mill etching process claims that Wei Pang emailed Hao Zhang and others
15 Avago's ion milling process specifications. *See* Indictment at ¶30(rr). Are those specifications a
16 trade secret? The definition claims that a machine-specific trimming code is important to the
17 process. The Indictment does not allege that Professor Zhang stole this trimming code. So, what
18 specifications were trade secrets? As with the majority of the allegations in this Indictment this
19 overt act does not provide Professor Zhang with enough information to mount his defense to this
20 allegation.

21 Alleged Avago and Skyworks Trade Secrets

22 The Indictment contains definitions for nine alleged trade secrets without a related
23 substantive count or overt act. The four alleged Avago trade secrets are: Automatic Parameter

1 Testing (APT), Applications for Avago's FBAR Technology, Aluminum Nitride (AlN) Deposition
2 Details, and High Tone Bulk Acoustic Resonators. The Skyworks trade secrets are: Equipment
3 Specifications Stored on Shared Drives, Wafer Chemical Quantity Calculation Recipes, Mask
4 Layouts, Module Performance Data, and BAW Project Plans.

5 If the government intends to attempt to prove that Professor Zhang stole or conspired to
6 steal these alleged trade secrets then it should be required to provide further detail about these trade
7 secrets that are broadly defined in the Indictment. What was the trade secret that Professor Zhang
8 or his co-conspirators allegedly stole? Who stole it – Professor Zhang or someone else? When did
9 that person steal it? How did he steal it? Perhaps these references to other trade secrets are
10 unnecessary. But, to the extent the government seeks to prosecute Professor Zhang on the
11 conspiracy charge for any alleged theft of these secrets, the government should be required – at
12 the very minimum – to provide a bill of particulars with this information.

14 CONCLUSION

15 For the reasons sets forth above, this Court should grant Professor Zhang's request for a
16 bill of particulars.

18 Date: July 15, 2016

Respectfully submitted,

20 /s/ Michael L. Brown
21 Michael L. Brown
22 Attorney for Defendant Hao Zhang